



Frederick County Cancer Investigation: Update

Frederick County Health Department
Maryland Department of
Health and Mental Hygiene
March 14, 2011



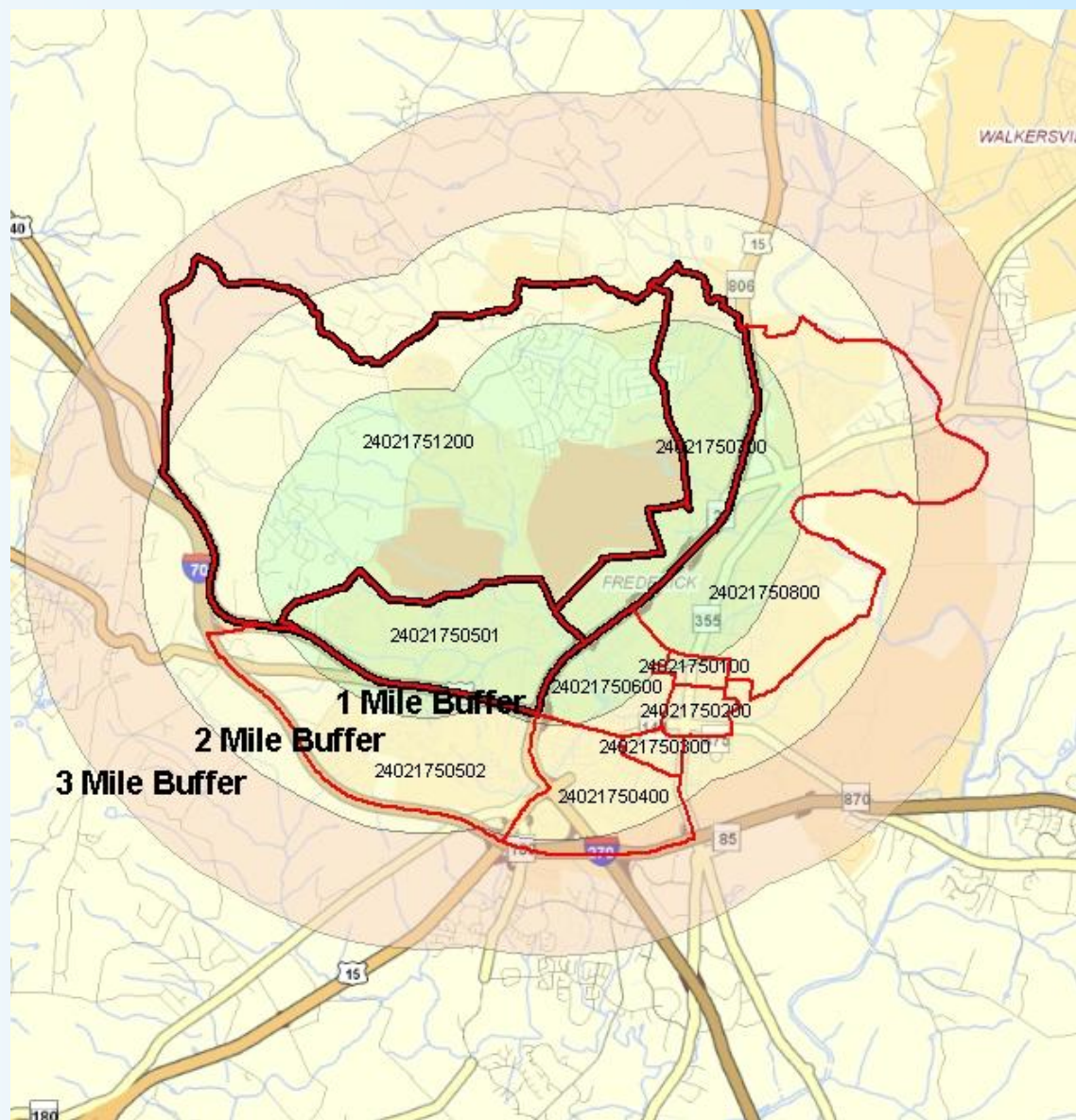
Issues From Last Update

- Compare Age at Diagnosis in Frederick areas with Maryland data
- Look in more detail at Ages at Diagnosis
 - Further break down into specific cancer types
 - Look at cases that were “outliers” with young ages
- Expand space and time of analysis
 - Look at additional census tracts
 - Go back and include data to Diagnosis Year 1992 and forward to include 2008



Expanded Analysis

- 7 census tracts added to original 3 tracts, to expand area to 2 mile buffer
- Expand to years 1992-2008





Characteristics of Expanded Investigation

- All cancer cases reported to the Maryland Cancer Registry in Frederick County as of 2/8/2011
- Standardized Incidence Ratios (SIRs) calculated for years of complete data (1992-2008)
- Population in 2000 Census in 10 census tracts (58,081) was 29.7% of Frederick County population (195,277)



Standardized Incidence Ratios

- Invasive cancers AND *in situ* bladder cancer
- Used the period 1992-2008 because 2009 and 2010 Registry data are not yet complete



	Number of Cancer Cases Diagnoses During the Period 1992 – 2008 and Reported to the Maryland Cancer Registry, by Year	
	Frederick County	10 Census Tracts
1992	581	212
1993	589	195
1994	583	198
1995	731	228
1996	737	236
1997	729	242
1998	798	238
1999	786	238
2000	871	249
2001	862	229
2002	1,078	338
2003	1,002	273
2004	1,118	330
2005	1,181	354
2006	1,009	291
2007	1,005	286
2008	971	242
2009	960	257
2010	2	1

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011

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Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for All Cancer Sites and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
All sites***	4,379	4,592	0.95	0.93-0.98	Lower than expected	4,498	0.97	0.94-1.00	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

***Includes in situ bladder cancer

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011

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Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Lung Cancer and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Lung & Bronchus	605	620	0.98	0.89-1.06	No	651	0.93	0.86-1.00	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011

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Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Breast Cancer and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Female Breast	682	698	0.98	0.90-1.05	No	689	0.99	0.92-1.07	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011

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Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Colorectal Cancer and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Colo-rectal Cancer	480	517	0.93	0.85-1.02	No	495	0.97	0.88-1.06	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011

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Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Prostate Cancer and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Prostate	599	634	0.95	0.87-1.23	No	667	0.89	0.83-0.97	Lower than expected

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland



Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Brain and Central Nervous System Cancer and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Brain & CNS	65	72	0.90	0.69-1.15	No	62	1.04	0.80-1.32	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland



Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Kidney and Bladder Cancer and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Kidney & Bladder ***	316	334	0.95	0.84-1.06	No	304	1.04	0.93-1.16	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

***Includes in situ bladder cancer

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011

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Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Leukemia and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Leukemia	82	99	0.83	0.66-1.03	No	94	0.87	0.69-1.08	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011

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Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Lymphoma and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Lymphoma	207	213	0.97	0.84-1.11	No	192	1.08	0.94-1.24	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011

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Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Liver Cancer and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Liver	34	31	1.10	0.76-1.54	No	46	0.74	0.50-1.03	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland



Cases Observed in the 10 Census Tracts and Expected Numbers of Cases for Thyroid Cancer and Standardized Incidence Ratios, 1992-2008

Frederick County 10 Census Tracts: 750100,750200,750300,750400,750501,750502,750600,750700,750800, 751200

Cancer Site*	^Observed Number in 10 Census Tracts, 1992 - 2008	^Expected Number of Cases Based on Age-Specific Frederick County Rates 1992-2008	SIR** compared to Frederick County	95% CI	10 Census Tracts Statistically Different from Frederick County?	^Expected Number of Cases Based on Age-Specific Maryland Rates 1992-2008	SIR** compared to Maryland	95% CI	10 Census Tracts Statistically Different from Maryland?
Thyroid	97	111	0.88	0.70-1.07	No	87	1.12	0.90-1.36	No

* Includes all invasive cancer excluding basal and squamous cell carcinoma of the non-genital skin, and including in situ bladder cancer

** Standard Incidence Ratio= Observed Cases/Expected Cases

***Includes in situ bladder cancer

^ Observed and Expected cases derived from Maryland Cancer Registry consolidated data as of February 8, 2011 with geocoding of data for Frederick County, processed in SEER Stat for expected numbers and age-specific rates for Frederick County and Maryland

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011

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Age of Diagnosis by Type of Cancer, Diagnosis Years 1992-2008

Cancer Group	Median Age at Diagnosis (Years)		
	Frederick, 10 Census Tracts	Frederick County	Maryland
Bone	38	38	44
Breast (Female)	61	59	60
Endocrine	42	45	49
Gastrointestinal	70	68	69
Genitourinary (incl. bladder)	70	66	68
Gynecologic	58	58	59
Hematologic (incl. leukemia/ lymphoma)	65	64	65
Liver	61	62	65
Lung	71	70	69
Neurologic (incl. brain)	59	56	57
Prostate	69	68	68
Skin - Melanoma	59	57	59

Source: Maryland Cancer Registry Consolidated data as of 2/8/2011



Next Steps

- Continue some spatial/clustering analysis
- Continue to look at Age of Diagnosis, other demographic factors
- Review of environmental data with MD Dept of Environment, Fort Detrick
- Preparation of final report